

REMARKS/ARGUMENTS

Reconsideration of the application is requested.

Claims 11, 12, and 14 - 22 are now in the application. Claims 11, 17, and 22 have been amended. Claims 1 – 10 and 13 had been canceled previously.

Support for the added terminology in claims 11, 17 and 22 is found in the specification. Particular reference is had to page 3, lines 29-32; page 10, lines 18-20; and page 11, lines 11-25. The initial contraction of the piezoelectric actuator causes the gap 9 to expand and to fill up with fluid. When the piezoelectric actuator is then driven to expand, the gap 9 is still expanded and filled with fluid so that the fluid now becomes a hydraulic cushion that adds to the amount of stroke of the displaceable component.

Reference is also had to the drawing figures. For example, Fig. 4 shows the minimum gap 9 at a value of h_0 . Then the actuator is contracted in Fig. 5 by the amount δ . This causes the gap 9 to expand to $h_0+\delta$. Then the actuator is expanded as shown in Fig. 7. The result is that the value of the stroke has two components, namely, the expansion of the actuator Δl and the amount δ .

It is possible with the invention, to achieve a greater stroke without having to “push” the bias voltage and the voltage of the drive signal. It is possible to work within the boundaries of the conventional field strengths, yet to obtain a clearly increased amount of stroke.

We now turn to the art rejection, in which the claims have been rejected as being obvious over Mock (EP 1079158) and Kuwajima et al. (US 2002/0048124 A1, hereinafter “Kuwajima”) under 35 U.S.C. § 103.

The new grounds of rejection are well taken. Kuwajima applies a bias voltage to the actuator, opposite the general polarization of the actuator. This causes the actuator to contract. When the drive voltage is later applied, i.e., the voltage corresponding to the preferred polarization, the actuator is caused to expand.

While Kuwajima may be interpreted to teach an increased expansion due to the opposite voltages (bias voltage, drive voltage), there is nothing in either reference that would point to the hydraulic bearing of the amended claims. Neither the structure nor the function of the claimed invention are met by the prior art.

In summary, none of the references, whether taken alone or in any combination, either show or suggest the features of any of the independent claims 11, 17, or 22. All of the claims are, therefore, patentable over the art of record. Reconsideration and the allowance of the claims are solicited.

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